KENT COUNTY HEALTH DEPARTMENT

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2006 WEST NILE VIRUS SUMMARY: AN EPIDEMIOLOGICAL PERSPECTIVE

By Mark Hall, MD, MPH, Kent County Health Department Medical Director

As of December 8, 2006, there have been 52 confirmed cases of West Nile Virus (WNV) in Michigan. Included in this number were 13 cases from Kent County. Based on the crude rate of five per 1,000,000 in the state, the expected number of cases would be three. So why the high number? Is this a statistical aberration? Is Kent County a hot bed for West Nile activity, or are we just better at counting cases? Perhaps the answer lies somewhere in between.

Establishing the incidence of WNV cases is complicated by the wide spectrum of illness the virus causes. The CDC has long held that as many as 80% of cases are completely asymptomatic. A flu-like illness is felt to be the presentation in nearly 20%, leaving less than one percent demonstrating neuroinvasive disease.* In other words, for every positive test in the setting of severe disease, there are 99 potentially positive tests that are associated with much less (or absent) disease severity. It is easy to predict that some of the more mild cases are identified and ultimately lumped together with those that are unquestionably severe.

WNV testing policies are subject to individual interpretation, and have been somewhat of a moving target from year to year. Though more standardized now, there has been variation between states (and presumably counties) regarding distribution of testing protocols and counting of positive tests in the absence of symptoms. The net result has frequently led to "apples to oranges" comparisons.

A retrospective review of the cases in Kent County demonstrates that as many as half of the cases identified do not ultimately appear to represent the severe neuroinvasive form of the disease. There is no doubt that part of our increased rate is due to the diligence and awareness of Kent County providers. Although these same factors contribute to the increased rate of WNV in the county, the Health Department is pleased that our medical community has responded with heightened awareness regarding WNV. With your help, we will continue to perform careful surveillance of WNV on Kent County.

* "Neuroinvasive disease requires the presence of fever and at least one of the following, as documented by a physician and in the absence of a more likely clinical explanation:

- Acutely altered mental status (e.g., disorientation, obtundation, stupor, or coma), or
- Other acute signs of central or peripheral neurologic dysfunction (e.g., paresis or paralysis, nerve palsies, sensory deficits, abnormal reflexes, generalized convulsions, or abnormal movements), or
- Pleocytosis (increased white blood cell concentration in cerebrospinal fluid [CSF]) associated with illness clinically compatible with meningitis (e.g., headache or stiff neck).

Non-neuroinvasive disease requires, at minimum, the presence of documented fever, as measured by the patient or clinician, the absence of neuroinvasive disease (above), and the absence of a more likely clinical explanation for the illness. Involvement of non-neurological organs (e.g., heart, pancreas, liver) should be documented using standard clinical and laboratory criteria."[1]

1. Centers for Disease Control and Prevention, National Notifiable Diseases Surveillance System Case Definition of Neuroinvasive and Non-Neuroinvasive Domestic Arboviral Diseases, http://www.cdc.gov/epo/dphsi/casedef/arboviral_current.htm, accessed Nov, 15, 2006.

2005/2006 Influenza Summary-Kent County

Quick Facts:

- *KCHD received twice as many reports of confirmed influenza cases during the 2005/06 influenza season than in the previous two seasons.*

- *The age distributions for the past three influenza seasons reveal the expected burden of illness in the young and elderly populations.*

"Sniff…Cough…AAACHOO!" Like the steady sound of a freight engine charging in the distance, the familiar sounds of the season are building as the influenza virus makes its annual trek around the bend and through your office door. As you tend to the afflicted in emergency departments, private offices, and urgent care sites, the Kent County Health Department (KCHD) is busy collecting data to help answer the questions of how influenza is affecting our community as a whole.

When is influenza activity peaking?

Due to enhanced surveillance efforts as part of pandemic influenza preparedness, KCHD received twice as many reports of confirmed influenza cases during the 2005/06 influenza season than in the previous two seasons. Unfortunately, it cannot be determined whether this was due to increased illness in the community or better reporting from the health care community. Thus is the nature of surveillance data - it cannot determine *how many* Kent County residents are sick with the flu. This data is used, however, to monitor trends in local activity and compare this activity with the state and nation.

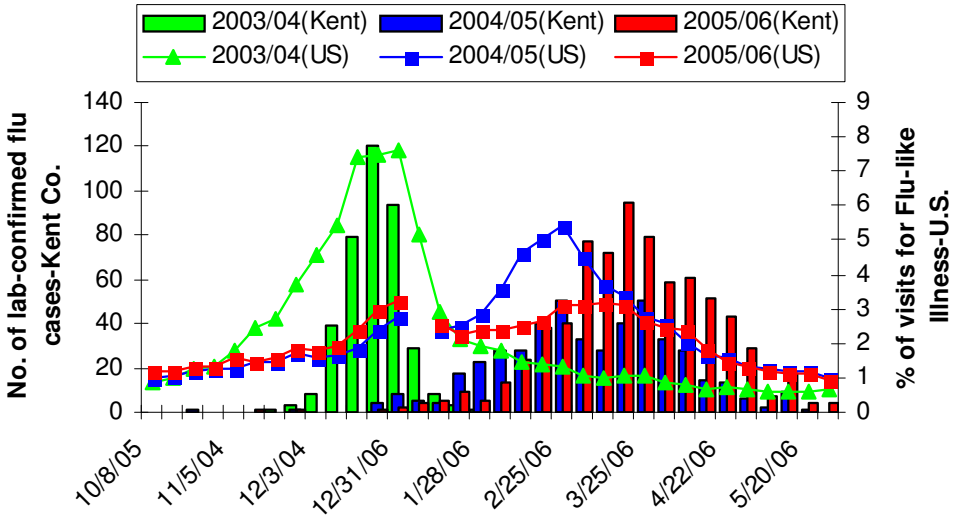
Local and nationwide influenza data for the past three influenza seasons are presented in Figure 1. Typically, influenza season peaks between January and April. It is normal to see variations in the onset and duration of activity from year to year.

Comparing the 2005/06 season to the previous seasons, there was not a distinctive peak nationwide as activity remained fairly steady. Based on confirmed cases in Kent County, our peak activity occurred later than the previous two seasons. The 2003/04 season was abnormal in the fact that peak activity occurred in December. Such an abnormality stresses the importance of a strong surveillance system that can detect unusual activity and allow for a prompt and efficient public health response.

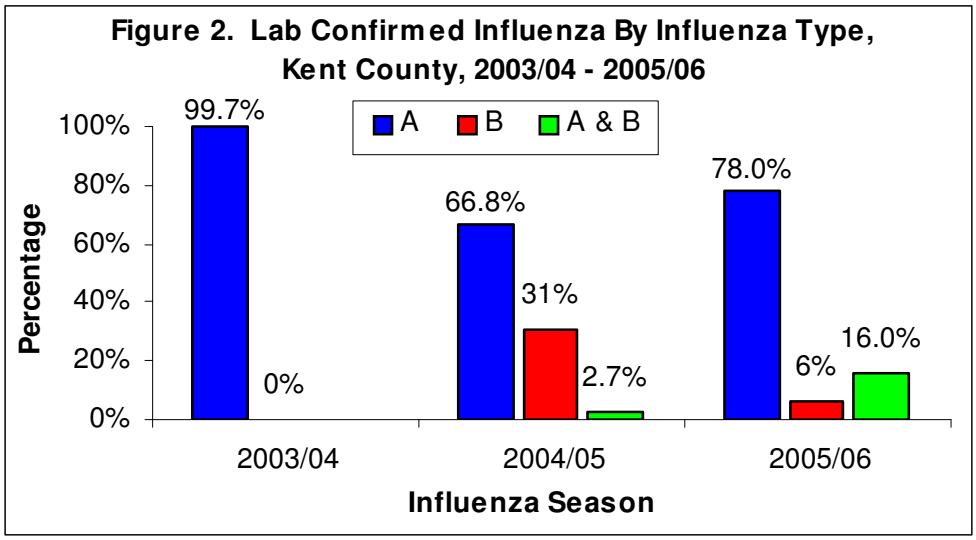
Who is getting sick?

Based on demographic information included with confirmed cases of influenza, the age distributions for the past three influenza seasons reveal the expected burden of illness in the young and elderly populations. Rates (per 10,000 population) are calculated to arrive at these distributions, and although not perfect due to the nature of surveillance data, they allow for generalized comparisons of influenza's impact on the population.

Figure 1. Kent County Reported Influenza Cases vs. Percentage of Visits for Influenza-like Illness* in the U. S.



*Influenza-like Illness: Fever > 37.7° C AND one of the following: cough or sore throat



For example, 2003-2004 Kent County data revealed that the 0-17 age group had a greater rate of influenza than the 65+ age group (13.3 vs. 10.9 cases per 10,000 population). This trend was also seen nationwide, and 152 influenza-associated deaths in U.S. residents aged < 18 years were reported by 40 states (2003-2004 was the first season CDC requested these deaths be reported).

What types of viruses are circulating?

Virus types identified in laboratory-confirmed cases in Kent County (Figure 2) have closely reflected those identified through the nationwide CDC Laboratory Surveillance System (Table 1). The main difference being the percentage of type B viruses identified in the 2005-2006 season. Sixteen percent of tests during the 2005-2006 season revealed individuals who were infected with both A and B type viruses. It has been questioned whether these results are valid or are due to inaccuracies in testing mechanisms. KCHD will continue to monitor this trend to determine if continued use of rapid tests for influenza viruses yield similar results in the future.

Table 1: Virus type (%) identified by CDC's Nationwide Laboratory Surveillance System for the past three influenza seasons

	Virus Type	
Season	**A**	**B**
2003-2004	99%	1%
2004-2005	75%	25%
2005-2006	80%	20%

Conclusion

Just as rail cars need a steaming engine to pull them along, answers to these questions are driven by data provided by front-line health care providers. KCHD relies on health care practitioners and laboratories to report influenza data in the form of individual laboratory confirmed cases and weekly aggregate numbers of patients seen for influenza-like illness (ILI). Your continued support of this effort is critical to building a strong surveillance system, which has been identified by the Department of Health and Human Services as one of its top five priorities for pandemic influenza preparedness. Thank you for your efforts - we couldn't do it without you.

KCHD continuously updates data on its web site during each influenza season. This data can be accessed at the following address: www.accesskent.com/Health/HealthDepartment/CD_Epid/flu_trends.htm.

QUICK FACTS:

- *The Department of Health and Human Services has identified a strong surveillance system as one of its top five priorities for pandemic influenza preparedness.*
- *KCHD recieves reports of individual lab-confirmed influenza cases in the county.*

HEALTH DEPARTMENT
Caring today for a healthy tomorrow

CD/EPI Unit
700 Fuller Avenue, NE
Grand Rapids, MI 49503

Phone: 616.632-7228
Fax: 616.632-7085

We're on the Web!
www.accessKent.com/health

If you would like to be added to our mailing list, please contact the Kent County Health Deparment CD/EPI Unit at: 616.632.7228

Does the Health Department Do That?

The Kent County Health Department receives many calls requesting services that we just aren't able to provide. Here are some of the communicable disease related services that we DO provide:

Testing/Diagnosis The **ONLY** infections that we diagnose are:

- Tuberculosis
- Gonorrhea
- Chlamydia
- Syphilis
- HIV
- Hepatitis B*
- Hepatitis C*

Must meet risk criteria **and be uninsured*

Exceptions: KCHD tests for enteric organisms when investigating a gastrointestinal outbreak.

KCHD also provides or coordinates testing for suspect bioterrorism agents from specimens that are sent to us by providers or laboratories.

Treatment The **ONLY** infections that we treat are:

- Tuberculosis
- Gonorrhea
- Chlamydia
- Syphilis

Prophylaxis (Except for tuberculosis, only contacts of **confirmed** cases are eligible)

- Tuberculosis
- Hepatitis A (Immunoglobulin only)
- Measles*
- Pertussis*
- Meningococcal disease*

**Must be uninsured and without an established health care provider, except in outbreak situations requiring an urgent control and prevention effort.*

Rabies

- We DO offer information about rabies risk assessment for animal bites or exposures. However, we do not offer rabies immunoglobulin or vaccine for post exposure prophylaxis. This must be administered in the emergency room. The remainder of the vaccine series is encouraged to be provided by the patient's own doctor if possible.